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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.



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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/781,113
Filing Date: February 18, 2004
Appellant(s): VROOME, CLEMENS JOHANNES

William C. Gehris
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed January 31, 2011 appealing from the Office action mailed June 8, 2010.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

1-17 and 20-26

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the

subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

6,058,844	Niemiec	05-2000
5,156,312	Kurie	10-1992
3,238,869	West et al.	03-1966
6,832,831	Shima et al.	12-2004
6,550,390	Frankenberger	04-2003
5,913,471	Makosch et al.	06-1999
3,875,682	Justus et al.	04-1975

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 5, 7, 8, 10-15 and 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,058,844 to Niemiec in view of U.S. Patent

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No. 5,156,312 to Kurie, U.S. Patent No. 3,238,869 to West et al., and U.S. Patent No. 6,832,831 to Shima et al.

With respect to claims 1 and 5, Niemiec teaches a web-fed rotary printing press, in the form of a web-fed rotary offset press, comprising: at least one press cylinder, 16, for printing a paper web, 14, conveyed at a controllable first tensile stress; a dryer, 18, disposed downstream of said press cylinder, said dryer guiding the paper web along a path; a first pull roll, 20, disposed downstream of said dryer for conveying the paper web along the path with a second tensile stress, and an apparatus for driving said pull roll at a controllable rotational speed which sets said second tensile stress.

Niemiec does not teach said dryer including a plurality of nozzle bars disposed on both sides of the web guiding the web along a meander-like path, the nozzle bars being spaced apart and offset from one another, an apparatus downstream of the press cylinder and upstream of the dryer for separating the paper web from said press cylinder during a normal printing operation, said separating of the paper web from said press cylinder being decoupled from the conveying of the paper web along the path, or a controller coupled to said at least one press cylinder and to said second apparatus, said controller setting said first tensile stress and said second tensile stress such that said second tensile stress is less than said first tensile stress.

Kurie teaches a dryer including a plurality of nozzle bars, 16, disposed on both sides of a web, guiding the web along a meander-like path, the nozzle bars being spaced apart and offset from one another. See column 4, lines 1-18, column 6, lines 41-61 and Fig. 6.

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the dryer of Niemiec to include nozzle bars, as taught by Kurie, in order to effectively move the web through the dryer.

West et al. teaches an apparatus, 160, 161, disposed downstream of a press cylinder, 30, for separating a web from the press cylinder decoupled from the conveying of the web. See column 10, lines 3-16.

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the invention of Niemiec to have a separating apparatus, as taught by West et al. in order to improve the transition of the web from the last press cylinder into the dryer and minimize potential damage to the web.

Shima et al. teaches a printing press comprising a printing unit, PU, for printing a paper web, 1, conveyed at a controllable first tensile stress, a dryer, HU, disposed downstream of said printing unit, said dryer guiding the web along a path, an apparatus, 54, for conveying the paper web along a path through said dryer at a controllable second tensile stress, and a controller, 7, coupled to said printing unit and said conveying apparatus, said controller setting said first tensile stress and said second tensile stress such that said second tensile stress is less than said first tensile stress. See column 6, line 56 – column 7, line 21, column 11, lines 32-67, column 15, lines 3-58 and Fig. 3.

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the apparatus of Niemiec to have a controller controlling the first

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and second tensile stresses, as taught by Shima et al., so that the drying of the web can be better controlled.

With respect to claim 2, although Niemiec, Kurie, West et al., and Shima et al. do not explicitly teach controlling the second tensile stress to be equal to or less than 10% of said first tensile stress, one having ordinary skill in the art would recognize that the acceptable tensile stress would be highly dependent upon the type of material used in the paper web and therefore the ideal values could be best determined through routine experimentation.

With respect to claims 7, 10-13, and 23 Niemiec teaches a web-fed rotary printing press, in the form of a web-fed rotary offset press, comprising: at least one press cylinder, 16, in the form of a driven, rotating element, for printing a paper web, 14, conveyed at a controllable first tensile stress; a dryer, 18, disposed downstream of said press cylinder, said dryer guiding the paper web along a path; and a first pull roll, 20, which is a driven, rotating cooling roll, disposed downstream of said dryer for conveying the paper web along the path under a second tensile stress.

Niemiec does not teach said dryer including a plurality of nozzle bars disposed on both sides of the web guiding the web along a meander-like path, the nozzle bars being spaced apart and offset from one another, an apparatus downstream of the press cylinder and upstream of the dryer for separating the paper web from said press cylinder during a normal printing operation, or a second pull roll, in the form of a driven, rotating element, disposed downstream of said press cylinder and upstream of said

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dryer for controllably setting a third tensile stress on the paper web between the at least one press cylinder and said second pull roll.

Kurie teaches a dryer including a plurality of nozzle bars, 16, disposed on both sides of a web, guiding the web along a meander-like path, the nozzle bars being spaced apart and offset from one another. See column 4, lines 1-18, column 6, lines 41-61 and Fig. 6.

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the dryer of Niemiec to include nozzle bars, as taught by Kurie, in order to effectively move the web through the dryer.

West et al. teaches an apparatus, 160, 161, disposed downstream of a press cylinder, 30, for separating a web from the press cylinder. See column 10, lines 3-16.

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the invention of Niemiec to have a separating apparatus, as taught by West et al. in order to improve the transition of the web from the last press cylinder into the dryer and minimize potential damage to the web.

Shima et al. teaches a printing press comprising a printing unit, PU, for printing a paper web, 1, conveyed at a controllable first tensile stress, a dryer, HU, disposed downstream of said printing unit, said dryer guiding the web along a path, a second pull roll, 31, disposed downstream of said printing unit and upstream of said dryer for controlling a tensile stress between said printing unit and said second pull roll, an apparatus, 54, for conveying the paper web along a path through said dryer at a controllable second tensile stress, and a controller, 7, coupled to said printing unit and

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said conveying apparatus, said controller setting said first tensile stress and said second tensile stress such that said second tensile stress is less than said first tensile stress. See column 6, line 56 – column 7, line 21, column 11, lines 32-67, column 15, lines 3-58 and Fig. 3.

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the apparatus of Niemiec to have a controller controlling the first and second tensile stresses, as taught by Shima et al., so that the drying of the web can be better controlled.

With respect to claims 8 and 24-25, although Niemiec, Kurie, West et al., and Shima et al. do not explicitly teach controlling the second tensile stress to be equal to or less than 10% of said first tensile stress, one having ordinary skill in the art would recognize that the acceptable tensile stress would be highly dependent upon the type of material used in the paper web and therefore the ideal values could be best determined through routine experimentation.

With respect to claims 14-15 Niemiec teaches a method for treating a printed material web in a printing material web in a web-fed rotary printing press which further comprises: feeding a paper web to a press cylinder under a first controllable tensile stress, printing on the paper web using the press cylinder, and conveying the paper web along a drying path under a second controllable tensile stress of the paper web.

Niemiec does not teach the drying path being established by a plurality of nozzle bars disposed on both sides of the web guiding the web along a meander-like path, the nozzle bars being spaced apart and offset from one another, that the second

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controllable tensile stress of the paper web is controllably set to be equal to or less than 10% of the first controllable tensile stress, or separating the paper web from the press cylinder during a normal printing operation, the separating of each paper web from the press cylinder being decoupled from the conveying of the paper web along the path, wherein the second controllable tensile stress is set to a value suitable for conveying the paper web after separation from the press cylinder.

Kurie teaches a dryer having a drying path established by a plurality of nozzle bars, 16, disposed on both sides of the web guiding the web along a meander-like path, the nozzle bars being spaced apart and offset from one another. See column 4, lines 1-18, column 6, lines 41-61 and Fig. 6.

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the dryer of Niemiec to include nozzle bars, as taught by Kurie, in order to effectively move the web through the dryer.

West et al. teaches a method of using an apparatus, 160, 161, disposed downstream of a press cylinder, 30, for separating a web from the press cylinder decoupled from the conveying of the paper web along the path. See column 10, lines 3-16.

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the method of Niemiec to include a separating step, as taught by West et al. in order to improve the transition of the web from the last press cylinder into the dryer and minimize potential damage to the web.

Shima et al. teaches a printing press comprising a printing unit, PU, for printing a paper web, 1, conveyed at a controllable first tensile stress, a dryer, HU, disposed downstream of said printing unit, said dryer guiding the web along a path, an apparatus, 54, for conveying the paper web along a path through said dryer at a controllable second tensile stress, and a controller, 7, coupled to said printing unit and said conveying apparatus, said controller setting said first tensile stress and said second tensile stress such that said second tensile stress is less than said first tensile stress. See column 6, line 56 – column 7, line 21, column 11, lines 32-67, column 15, lines 3-58 and Fig. 3.

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the apparatus of Niemiec to have a controller controlling the first and second tensile stresses, as taught by Shima et al., so that the drying of the web can be better controlled.

Although Niemiec, Kurie, West et al., and Shima et al. do not explicitly teach controlling the second tensile stress to be equal to or less than 10% of said first tensile stress, one having ordinary skill in the art would recognize that the acceptable tensile stress would be highly dependent upon the type of material used in the paper web and therefore the ideal values could be best determined through routine experimentation.

Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niemiec in view of Kurie, West et al. and Shima et al., as applied to claims 1, 2, 5, 7, 8,

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10-15 and 23-26 above and further in view of U.S. Patent No. 6,550,390 to Frankenberger.

Niemiec, Kurie, West et al. and Shima et al. teach all that is claimed, as in the above rejection of claims 1, 2, 5, 7, 8, 10-15 and 23-26, except that the first apparatus for separating the paper web from said press cylinder separates the paper web from said press cylinder without contact, having at least one element selected from the group consisting of blowing elements and ultrasound elements.

Frankenberger teaches an apparatus for separating a paper web from a cylinder using ultrasonic waves to separate the paper web without contact. See column 4, lines 45-60.

It would have been obvious to one having ordinary skill in the art at the time of the invention to further modify the invention of Niemiec to use the ultrasonic separation device of Frankenberger in order to be able to separate the paper web from the cylinder with less potential for damage to the paper web.

Claims 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niemiec in view of Kurie, West et al. and Shima et al., as applied to claims 1, 2, 5, 7, 8, 10-15 and 23-26 above, and further in view of U.S. Patent No. 5,913,471 to Makosch et al.

Niemiec, Kurie, West et al. and Shima et al. teach all that is claimed, as in the above rejection of claims 1, 2, 5, 7, 8, 10-15 and 23-26, except that the second pull roll is configured or coated in an ink-repellent manner, at least in some sections.

Makosch et al. teaches a separating roll, 3a, 4a, for a printing press that is configured or coated in an ink-repellent manner. See column 3, lines 25-27.

It would have been obvious to one having ordinary skill in the art at the time of the invention to further modify the invention of Niemiec to use the ink repellant separating roll, as taught by Makosch et al., in order to prevent an ink layer from building up.

Claims 16-17 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niemiec in view of Kurie, West et al. and Shima et al., as applied to claims 1, 2, 5, 7, 8, 10-15 and 23-26 above, and further in view of U.S. Patent No. 3,875,682 to Justus et al.

With respect to claims 16-17 and 22, Niemiec, Kurie, West et al. and Shima et al. do not teach that the drying path is composed of path parts which follow one another and are oppositely curved, is substantially meander-like, or is substantially sinusoidal.

Justus et al. teaches a drying path composed of path parts which follow one another and are oppositely curved, is substantially meander-like, or is substantially sinusoidal. See Figure 1.

It would have been obvious to one having ordinary skill in the art at the time of the invention to use the drying path of Justus et al. with the modified dryer of Niemiec in order to reduce flutter and improve drying efficiency.

With respect to claim 20, although Niemiec, Kurie, West et al., Shima et al. and Justus et al. do not explicitly teach controlling the second tensile stress such that the

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drying path has a radii of curvature following one another of in each case less than 200 mm, these values would appear to be specific to a given application and could be readily determined by routine experimentation.

With respect to claim 21, Niemiec teaches the use of a dryer, 8, through which a temperature of the paper web along the drying path would increase.

(10) Response to Argument

In response to appellant's arguments with respect to claim 1, that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the appellant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In this case, as discussed in the above rejection, all of the elements of the claim were well known in the art at the time the claimed invention was made. As such, the combination of these elements would have been obvious to one having ordinary skill in the art.

Although Niemiec teaches a dryer in which the web is "maintained under tension so that it moves in an essentially straight line", Kurie teaches a dryer through which the web takes a meander-like path between two sets of air nozzles. In particular, Kurie teaches an individually controllable nozzle configuration which is "beneficial when

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processing different types and weights of continuous web products in the same drying equipment or when processing such products at different speeds". See column 2, lines 18-21. Therefore, one having ordinary skill in the art at the time of the invention, wishing to realize the advantages taught by Kurie, would have been drawn to modify the dryer of Niemiec to include the nozzles taught by Kurie in order to move more effectively a variety of types of webs through the dryer.

Likewise, although Niemiec does not discuss controlling the web at two different tensile stresses, Shima teaches this is beneficial and therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the apparatus of Niemiec to have the structure and controls to realize this advantage.

Specifically, Shima teaches that, after printing, "with effective elimination of disadvantage due to rapid heating, a finished printed product having high quality may be obtained". See column 2, lines 63-65. That is, quality is improved by moving a printed product through a dryer more slowly at a lower temperature. Shima realized this advantage by controlling the printed product to move at two different speeds. One having ordinary skill in the art, recognizing this advantage, would have found it desirable to modify the structure of Niemiec to include structure and controls to realize this modification.

Appellant argues that "the sheets in Shima are clearly not a web".

This argument is not persuasive because, in fact, Shima teaches control of the movement of a web of printing material which is continuous from the printing area to the exit of the dryer. Although Shima refers to this printing material as a sheet, the

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disclosure makes it obvious that the material is continuous and particularly that the teachings which are relied upon in the rejection are made on this continuous material, making them applicable to control of the continuous material taught by Niemiec. In particular, column 7, lines 4-9 of Shima state: "Incidentally, the loop-forming unit LU provided between the printing unit PU and the heat fixing unit HU serves to absorb a speed difference existing between a relatively low transport speed of the recording medium 1 provided by the heat fixing unit HU and a relatively high average transport speed of the medium 1 provided by the printing unit PU." This statement could only be true if the material were continuous (i.e., a web) as it was transported through all of the recited units. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention that the control scheme of Shima would have been applicable to any system in which it was desirable to have a lower drying speed relative to a higher printing speed.

Appellant argues that Shima only teaches the control of the speed of the recording medium, not of the tensile stress.

This argument is not persuasive because the tensile stress of the recording medium is directly related to the speed and as such, the control of the speed would serve to control the tensile stress as well. Controlling the tensile stress of a web of printed material is well known in the art and the relationship between speed and tensile stress is well established. Basically, slowing down the speed of the web puts less "pull" on the material as it travels and directly reduces the tensile stress. As a result,

controlling the speed controls the tensile stress and setting one is considered to be equivalent to setting the other for the purposes of this rejection.

In response to appellant's argument that there is no reason to modify the apparatus of Niemiec to have a controller as taught by Shima, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this case, Shima teaches that it is advantageous to operate with the web at a lower tension in a drying apparatus than in an upstream printing apparatus. One having ordinary skill in the art, recognizing this advantage, would have been readily able to apply this control scheme to the modified structure of Niemiec. Bodily incorporation of the structure of Shima is not required.

In response to appellant's argument that there is no teaching, suggestion, or motivation to combine the references, the examiner recognizes that obviousness may be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992), and *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007). In this case,

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as discussed earlier, Kurie teaches a structure which allows greater variation of control over the web movement in the dryer, in order to more effectively move the web through the dryer despite variations in web composition or speed. Similarly, Shima teaches an improved control scheme for a printing apparatus which better controls the movement of the printing medium so that a drying process produces a higher quality end product.

In response to appellant's argument that there is no disclosure of "a pull roll disposed downstream of said dryer for conveying the paper web along said meander-like path under a second tensile stress", this would have been an obvious result of the combination of references as presented. Niemiec teaches transport which is carried out by a pull roll. Kurie teaches movement of the web through a meander-like path without disclosing the manner of movement, which would have been reasonably carried out by a similar pull roll. Shima teaches that it is advantageous to have the movement through the dryer at a lower speed/tension than of the upstream components, but this does not preclude the use of the same pull roll operating to provide the lower speed/tension. One having ordinary skill in the art at the time of the invention would have found the combination of the references obvious and desirable, as discussed above, and would have been capable and motivated to make minor modifications to the systems in order to produce the desirable result.

In response to appellant's arguments with respect to claim 2, that the prior art references do not teach that "said controller sets said first tensile stress and said second tensile stress such that said second tensile stress is 10% or less than said first

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tensile stress", Shima teaches a "relatively low" second tensile stress with respect to a "relatively high" first tensile stress. Although this relationship is not expressed quantitatively, the claim of a particular comparative difference between the first and second tensile stress levels is not considered to be a patentable distinction over the teachings of Shima. It would have been obvious to one having ordinary skill in the art at the time of the invention that an appropriate level of tensile stress would be highly dependent upon the parameters of the printing system (i.e., a result-effective variable), including at least the size and type of printing material being used, the type and amount of printing ink used, and the size and temperature of the dryer. As a result, the amount of both the first and second tensile stresses required to produce a desirable (i.e., optimal) end product would have best been determined through routine experimentation using the particular parameters of a given apparatus and printing material and the resulting difference between the first and second tensile stresses would have been calculated based upon these experimental results to achieve the optimum difference.

In response to appellant's arguments with respect to claim 7, that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the appellant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA

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1971). In this case, as discussed in the above rejection, all of the elements and their function of the claim were well known in the art at the time the claimed invention was made. As such, the combination of these elements would have been obvious to one having ordinary skill in the art for the reasons discussed further below.

Although Niemiec teaches a dryer in which the web is "maintained under tension so that it moves in an essentially straight line", Kurie teaches a dryer through which the web takes a meander-like path between two sets of air nozzles. In particular, Kurie teaches an individually controllable nozzle configuration which is "beneficial when processing different types and weights of continuous web products in the same drying equipment or when processing such products at different speeds". See column 2, lines 18-21. Therefore, one having ordinary skill in the art at the time of the invention, wishing to realize the advantages taught by Kurie, would have been drawn to modify the dryer of Niemiec to include the nozzles taught by Kurie in order to more effectively move a variety of types of webs through the dryer.

Likewise, although Niemiec does not discuss controlling the web at two different tensile stresses, Shima teaches this is beneficial and therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the apparatus of Niemiec to have the structure and controls to realize this advantage.

Specifically, Shima teaches that, after printing, "with effective elimination of disadvantage due to rapid heating, a finished printed product having high quality may be obtained". See column 2, lines 63-65. That is, quality is improved by moving a printed

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product through a dryer more slowly at a lower temperature. Shima realized this advantage by controlling the printed product to move at two different speeds. One having ordinary skill in the art, recognizing this advantage, would find it desirable to modify the structure of Niemiec to include structure and controls to realize this change.

Appellant argues that “the sheets in Shima are clearly not a web”. In fact, Shima teaches control of the movement of a web of printing material which is continuous from the printing area to the exit of the dryer. Although Shima refers to this printing material as a sheet, the disclosure makes it obvious that the material is continuous (i.e., a web) and particularly that the teachings which are relied upon in the rejection are made on this continuous material, making them applicable to control of the continuous material taught by Niemiec. In particular, column 7, lines 4-9 of Shima state: “Incidentally, the loop-forming unit LU provided between the printing unit PU and the heat fixing unit HU serves to absorb a speed difference existing between a relatively low transport speed of the recording medium 1 provided by the heat fixing unit HU and a relatively high average transport speed of the medium 1 provided by the printing unit PU.” This statement could only be true if the material were continuous as it was transported through all of the recited units. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention that the control scheme of Shima would be applicable to any system in which it was desirable to have a lower drying speed relative to a higher printing speed.

Appellant argues that Shima only teaches the control of the speed of the recording medium, not of the tensile stress. In fact, the tensile stress of the recording

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medium is directly related to the speed and as such, the control of the speed would serve to control the tensile stress as well. Controlling the tensile stress of a web of printed material is well known in the art and the relationship between speed and tensile stress is well established. Basically, slowing down the speed of the web puts less "pull" on the material as it travels and directly reduces the tensile stress. As a result, controlling the speed controls the tensile stress and setting one is considered to be equivalent to setting the other for the purposes of this rejection.

In response to appellant's argument that there is no reason to modify the apparatus of Niemiec to have a controller as taught by Shima, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this case, Shima teaches that it is advantageous to operate with the web at a lower tension in a drying apparatus than in an upstream printing apparatus. One having ordinary skill in the art, recognizing this advantage, would be readily able to apply this control scheme to the modified structure of Niemiec. Bodily incorporation of the structure of Shima is not required.

In response to appellant's argument that there is no teaching, suggestion, or motivation to combine the references, the examiner recognizes that obviousness may be established by combining or modifying the teachings of the prior art to produce the

claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992), and *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007). In this case, as discussed earlier, Kurie teaches a structure which allows greater variation of control over the web movement in the dryer, in order to more effectively move the web through the dryer despite variations in web composition or speed. Similarly, Shima teaches an improved control scheme for a printing apparatus which better controls the movement of the printing medium so that a drying process produces a higher quality end product.

In response to appellant's argument that there is no disclosure of "a pull roll disposed downstream of said dryer for conveying the paper web along said meander-like path under a second tensile stress", this would have been an obvious result of the combination of references as presented. Niemiec teaches transport which is carried out by a pull roll. Kurie teaches movement of the web through a meander-like path without disclosing the manner of movement, which could reasonably carry out by a similar pull roll. Shima teaches that it is advantageous to have the movement through the dryer at a lower speed/tension than of the upstream components, but this does not preclude the use of the same pull roll operating to provide the lower speed/tension. One having ordinary skill in the art at the time of the invention would have found the combination of the references obvious and desirable, as discussed above, and would have been

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motivated and capable of making minor modifications to the systems in order to produce the desirable result.

In response to appellant's argument that the references do not make obvious a second pull roll disposed downstream of the press cylinder and upstream of the dryer, roller 31 of Shima is located downstream of the printing unit and upstream of the dryer and operates to move the printing medium between the units, effectively operating as a pull roll for the web. Appellant's claims do not further limit the structure in any way such that this cannot be considered to meet the limitations of the claim. Furthermore, Shima teaches this structure is important in order to obtain the change in speed/tension between the printing unit and the dryer, so it would have been obvious to one having ordinary skill in the art at the time of the invention to have included this or a similar structure in order to effect the advantageous modification of the controls.

In response to appellant's arguments with respect to claim 8, that the prior art references do not teach that "said controller sets said first tensile stress and said second tensile stress such that said second tensile stress is 10% or less than said first tensile stress", Shima teaches a "relatively low" second tensile stress with respect to a "relatively high" first tensile stress. Although this relationship is not expressed quantitatively, the claim of a particular comparative difference between the first and second tensile stress levels is not considered to be a patentable distinction over the teachings of Shima. It would have been obvious to one having ordinary skill in the art at the time of the invention that an appropriate level of tensile stress would be highly

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dependent upon the parameters of the printing system, including at least the size and type of printing material being used, the type and amount of printing ink used, and the size and temperature of the dryer (i.e., a result-effective variable). As a result, the amount of both the first and second tensile stresses required to produce a desirable or optimal end product would best be determined through routine experimentation using the particular parameters of a given apparatus and printing material and the resulting difference between the first and second tensile stresses would have been calculated based upon these experimental results to achieve optimization.

In response to appellant's arguments with respect to claim 14, that there is no reason to modify the method of Niemiec with the claimed limitations, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, Kurie, West et al. and Shima all teach advantageous modifications, as discussed above, which would have been obvious to one having ordinary skill in the art at the time of the invention.

In response to appellant's argument that the prior art references do not teach that "said controller sets said first tensile stress and said second tensile stress such that said second tensile stress is 10% or less than said first tensile stress", Shima teaches a "relatively low" second tensile stress with respect to a "relatively high" first tensile stress. Although this relationship is not expressed quantitatively, the claim of a particular

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comparative difference between the first and second tensile stress levels is not considered to be a patentable distinction over the teachings of Shima. It would have been obvious to one having ordinary skill in the art at the time of the invention that an appropriate level of tensile stress would be highly dependent upon the parameters of the printing system, including at least the size and type of printing material being used, the type and amount of printing ink used, and the size and temperature of the dryer (i.e., a result-effective variable). As a result, the amount of both the first and second tensile stresses required to produce a desirable or optimal end product would best been determined through routine experimentation using the particular parameters of a given apparatus and printing material and the resulting difference between the first and second tensile stresses would have been calculated based upon these experimental results to achieve optimization.

Appellant argues that "the sheets in Shima are clearly not a web". In fact, Shima teaches control of the movement of a web of printing material which is continuous from the printing area to the exit of the dryer. Although Shima refers to this printing material as a sheet, the disclosure makes it obvious that the material is continuous (i.e., a web) and particularly that the teachings which are relied upon in the rejection are made on this continuous material, making them applicable to control of the continuous material taught by Niemiec. In particular, column 7, lines 4-9 of Shima state: "Incidentally, the loop-forming unit LU provided between the printing unit PU and the heat fixing unit HU serves to absorb a speed difference existing between a relatively low transport speed of the recording medium 1 provided by the heat fixing unit HU and a relatively high

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average transport speed of the medium 1 provided by the printing unit PU." This statement could only be true if the material were continuous as it was transported through all of the recited units. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention that the control scheme of Shima would be applicable to any system in which it was desirable to have a lower drying speed relative to a higher printing speed.

Appellant argues that Shima only teaches the control of the speed of the recording medium, not of the tensile stress. In fact, the tensile stress of the recording medium is directly related to the speed and as such, the control of the speed would serve to control the tensile stress as well. Controlling the tensile stress of a web of printed material is well known in the art and the relationship between speed and tensile stress is well established. Basically, slowing down the speed of the web puts less "pull" on the material as it travels and directly reduces the tensile stress. As a result, controlling the speed controls the tensile stress and setting one is considered to be equivalent to setting the other for the purposes of this rejection.

In response to appellant's arguments that there is no teaching, suggestion, or motivation to combine the references, the examiner recognizes that obviousness may be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992), and *KSR*

International Co. v. Teleflex, Inc., 550 U.S. 398, 82 USPQ2d 1385 (2007). In this case, as discussed earlier, Kurie teaches a structure which allows greater variation of control over the web movement in the dryer, in order to more effectively move the web through the dryer despite variations in web composition or speed. Similarly, Shima teaches an improved control scheme for a printing apparatus which better controls the movement of the printing medium so that a drying process produces a higher quality end product.

Although Niemiec teaches a dryer in which the web is “maintained under tension so that it moves in an essentially straight line”, Kurie teaches a dryer through which the web takes a meander-like path between two sets of air nozzles. In particular, Kurie teaches an individually controllable nozzle configuration which is “beneficial when processing different types and weights of continuous web products in the same drying equipment or when processing such products at different speeds”. See column 2, lines 18-21. Therefore, one having ordinary skill in the art at the time of the invention, wishing to realize the advantages taught by Kurie, would be drawn to modify the dryer of Niemiec to include the nozzles taught by Kurie in order to more effectively move a variety of types of webs through the dryer.

Likewise, although Niemiec does not discuss controlling the web at two different tensile stresses, Shima teaches this is beneficial and therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the apparatus of Niemiec to have the structure and controls to realize this advantage.

Specifically, Shima teaches that, after printing, “with effective elimination of disadvantage due to rapid heating, a finished printed product having high quality may be

obtained". See column 2, lines 63-65. That is, quality is improved by moving a printed product through a dryer more slowly at a lower temperature. Shima realized this advantage by controlling the printed product to move at two different speeds. One having ordinary skill in the art, recognizing this advantage, would find it desirable to modify the structure of Niemiec to include structure and controls to realize this change.

In response to appellant's arguments with respect to claims 23 and 26, that there is no reason to modify the method of Niemiec with the claimed limitations, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, Kurie, West et al. and Shima all teach advantageous modifications, as discussed above, which would have been obvious to one having ordinary skill in the art at the time of the invention.

In response to appellant's arguments that the prior art does not teach "a controller coupled to said apparatus and to said second pull roll for controlling said second tensile stress and said third tensile stress such that said second tensile stress is less than said third tensile stress", the teachings of Shima are considered to be sufficient to teach this limitation. Because Shima controls the speed of the pull roll, 31, the tensile stress in the web downstream of this roller and upstream of this roller are both reduced with respect to the tensile stress in the printing apparatus, as is described in Shima, column 10, lines 57-62 and can be seen in Fig. 3 particularly.

Appellant argues that "the sheets in Shima are clearly not a web". In fact, Shima teaches control of the movement of a web of printing material which is continuous from the printing area to the exit of the dryer. Although Shima refers to this printing material as a sheet, the disclosure makes it obvious that the material is continuous (i.e., a web) and particularly that the teachings which are relied upon in the rejection are made on this continuous material, making them applicable to control of the continuous material taught by Niemiec. In particular, column 7, lines 4-9 of Shima state: "Incidentally, the loop-forming unit LU provided between the printing unit PU and the heat fixing unit HU serves to absorb a speed difference existing between a relatively low transport speed of the recording medium 1 provided by the heat fixing unit HU and a relatively high average transport speed of the medium 1 provided by the printing unit PU." This statement could only be true if the material were continuous as it was transported through all of the recited units. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention that the control scheme of Shima would be applicable to any system in which it was desirable to have a lower drying speed relative to a higher printing speed.

Appellant argues that Shima only teaches the control of the speed of the recording medium, not of the tensile stress. In fact, the tensile stress of the recording medium is directly related to the speed and as such, the control of the speed would serve to control the tensile stress as well. Controlling the tensile stress of a web of printed material is well known in the art and the relationship between speed and tensile stress is well established. Basically, slowing down the speed of the web puts less "pull"

on the material as it travels and directly reduces the tensile stress. As a result, controlling the speed controls the tensile stress and setting one is considered to be equivalent to setting the other for the purposes of this rejection.

In response to appellant's argument that there is no reason to modify the apparatus of Niemiec to have a controller as taught by Shima, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this case, Shima teaches that it is advantageous to operate with the web at a lower tension in a drying apparatus than in an upstream printing apparatus. One having ordinary skill in the art, recognizing this advantage, would be readily able to apply this control scheme to the modified structure of Niemiec. Bodily incorporation of the structure of Shima is not required.

In response to appellant's argument that there is no disclosure of "a pull roll disposed downstream of said dryer for conveying the paper web along said meander-like path under a second tensile stress", this would have been an obvious result of the combination of references as presented. Niemiec teaches transport which is carried out by a pull roll. Kurie teaches movement of the web through a meander-like path without disclosing the manner of movement, which could reasonably carry out by a similar pull roll. Shima teaches that it is advantageous to have the movement through the dryer at a

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lower speed/tension than of the upstream components, but this does not preclude the use of the same pull roll operating to provide the lower speed/tension. One having ordinary skill in the art at the time of the invention would have found the combination of the references obvious and desirable, as discussed above, and would have been motivated and capable of making minor modifications to the systems in order to produce the desirable result.

In response to appellant's arguments with respect to claim 24, that the prior art references do not teach that "said controller sets said second tensile stress and said third tensile stress such that said second tensile stress is 10% or less than said third tensile stress", Shima teaches a "relatively low" second tensile stress with respect to a "relatively high" third tensile stress. Although this relationship is not expressed quantitatively, the claim of a particular comparative difference between the first and second tensile stress levels is not considered to be a patentable distinction over the teachings of Shima. It would have been obvious to one having ordinary skill in the art at the time of the invention that an appropriate level of tensile stress would be highly dependent upon the parameters of the printing system, including at least the size and type of printing material being used, the type and amount of printing ink used, and the size and temperature of the dryer (i.e., a result-effective variable). As a result, the amount of both the first and second tensile stresses required to produce a desirable or optimal end product would best been determined through routine experimentation using the particular parameters of a given apparatus and printing material and the resulting

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difference between the first and second tensile stresses would have been calculated based upon these experimental results to achieve optimization.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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